

Remarks

Amendments

Claims 40, 51, 60, 67, 69, and 84 are amended herein to correct errors of a typographic or editorial nature (claim dependencies, antecedent basis for claim recitations, spelling). No new matter is introduced by any of the amendments, and entry thereof is requested.

Claims 1 - 95 are in the application, of which claims 86 - 94 have been withdrawn as being directed to a nonelected species. Accordingly, claims 1 - 85 and 95 are under consideration in the application.

Election of Species

The Examiner asserted that the “application contains claims directed to the following patentably distinct species:

Species 1, claims 1-2, pertaining to a MRAM wherein the cell structure is a GMR device;

Species 2, claims 1-3, pertaining to a MRAM wherein the cell structure is a MTJ device;

Species 3, claims 1-4, pertaining to a MRAM wherein the cell structure comprises a conductor layer;

Species 4, claims 1, 5, pertaining to a MRAM wherein the cell structure comprises an insulator layer;

Species 5, claims 1, 6, pertaining to a MRAM wherein the spin filtering element includes a ferromagnetic material;

Species 6, claims 1, 7-10, pertaining to a MRAM wherein spin filtering element includes a Heusler alloy;

Species 7, claims 1, 11, pertaining to a MRAM wherein spin filtering element includes an oxide based alloy;

Species 8, claims 1, 12-13, pertaining to a MRAM wherein spin filtering element includes a Mn based CMR material;

Species 9, claims 1, 14-16, pertaining to a MRAM wherein spin filtering element includes a Mn based ferromagnetic material;

Species 10, claims 1, 17-19, pertaining to a MRAM wherein spin filtering element includes a oxide based ferromagnetic material;

Species 11, claims 1, 20-21, pertaining to an MRAM wherein the spin holding element comprises a high spin diffusion length;

Species 12, claims 1, 22-24, pertaining to an MRAM wherein the spin holding element comprises B_i ;

Species 13, claims 1, 25-29, pertaining to an MRAM wherein the spin holding element is metal;

Species 14, claims 1, 30-32, pertaining to an MRAM wherein the cell structure is an MTJ having first and second ferromagnetic layers separated by an insulator;

Species 15, claims 1, 30, 33-34, 40, pertaining to an MRAM including a MTJ and a 3d transition ferromagnet material; [...]

Species 16, claims 1, 30, 35-36, pertaining to an MRAM including an MTJ and a 1st and 2nd ferromagnet layer comprising Heusler alloy;

Species 17, claims 1, 37-38, pertaining to an MRAM including an MTJ and a 1st and 2nd ferromagnet layer comprising an oxide based alloy;

Species 18, claims 1, 39, 41, pertaining to an MRAM wherein the cell structure is an GMR having first and second ferromagnetic layers separated by a conductor;

Species 19, claims 1, 39, 42-43, pertaining to an MRAM including a GMR and a 3d transition ferromagnet material;

Species 20, claims 1, 39, 44-45, pertaining to an MRAM including an GMR and a 1st and 2nd ferromagnet layer comprising Heusler alloy;

Species 21, claims 1, 39, 46-47, pertaining to an MRAM including an GMR and a 1st and 2nd ferromagnet layer comprising an oxide based alloy;

Species 22, claims 1, 30, 48-49, pertaining to an MRAM including a spin-valve MJT;

Species 23, claims 1, 30, 32, 49, 50-51, pertaining to an MRAM including a MJT and a pinning layer comprising an antiferromagnetic multilayer;

Species 24, claims 1, 30, 32, 49, 53-54, pertaining to an MRAM including a MJT and a pinning layer comprising a synthetic antiferromagnetic multilayer;

Species 25, claims 1, 30, 32, 49, 55-56, pertaining to an MRAM including a MJT and a pinning layer comprising an antiferromagnetic multilayer and a synthetic antiferromagnetic multilayer;

Species 26, claims 1, 30, 32, 49, 57-58, pertaining to an MRAM including a MJT and a pinning layer comprising a permanent magnet material;

Species 27, claims 1, 30, 59-62, pertaining to an MRAM including a pseudo-spin valve MTJ with a soft ferromagnetic layer;

Species 28, claims 1, 30, 63-65, pertaining to an MRAM including a MTJ comprising a granular material;

Species 29, claims 1, 39, 66-67, pertaining to an MRAM including a spin-valve GMR;

Species 30, claims 1, 39, 67-70, pertaining to an MRAM including a GMR and a pinning layer comprising an antiferromagnetic multilayer;

Species 31, claims 1, 39, 67, 71-72, pertaining to an MRAM including a GMR and a pinning layer comprising a synthetic antiferromagnetic multilayer;

Species 32, claims 1, 39, 41, 67, 73-74, pertaining to an MRAM including a GMR and a pinning layer comprising an antiferromagnetic multilayer and a synthetic antiferromagnetic multilayer;

Species 33, claims 1, 39, 41, 67, 75-76, pertaining to an MRAM including a GMR and a pinning layer comprising a permanent magnet material;

Species 34, claims 1, 39, 77-80, pertaining to an MRAM including a pseudo-spin valve GMR with a soft ferromagnetic layer;

Species 35, claims 1, 39, 81-83, pertaining to an MRAM including a GMR comprising a granular material;

Species 36, claims 1, 39, 84-85, pertaining to a MRAM with a GMR multilayer structure.

Species 37, claims 1, 95, pertaining to an MRAM array.”

Applicants elect Species 1, “pertaining to a MRAM wherein the cell structure is a MTJ device”, for prosecution on the merits in this application. The following is a listing of claims believed to be readable on the elected species:

1, 3, 5, 30 - 38, 48 - 63.

As the Examiner noted, claim 1 is generic.

All the claims in the application are believed to be in condition for allowance, and action to that effect is respectfully requested.

If the Examiner determines that a conference would facilitate prosecution of this application, the Examiner is invited to telephone Applicant’s representative, undersigned, at the telephone number set out below.

Respectfully submitted,



Bill Kennedy
Reg. No. 33,407

Reg. No. 33,407

Haynes Beffel & Wolfeld LLP
P.O. Box 366
Half Moon Bay, CA 94019
Telephone: (650) 712-0340